Implementation of the *Alberta Piping Plover Recovery Plan, 2002-2004:* Final Program Report

Fish & Wildlife Division

RESOURCE DATA AND SPECIES AT RISK SECTION

Alberta Species at Risk Report No. 99

Alberta
SUSTAINABLE RESOURCE DEVELOPMENT

Implementation of the *Alberta Piping Plover Recovery Plan, 2002-2004:* Final Program Report

Alberta Piping Plover Recovery Team

David R. C. Prescott (Team Leader), Alberta Fish and Wildlife Division
Mike Barr, Ducks Unlimited Canada / Alberta North American Waterfowl Management Plan
Lance C. Engley, Alberta Conservation Association
J. Paul Goossen, Canadian Wildlife Service
Gerald A. Haekel, Alberta Public Lands and Forests Division
D. Edward Hofman, Alberta Fish and Wildlife Division
B. Craig Horner, Alberta Beef Producers
Dug Major, Special Areas Board
Dave Moore, Alberta Fish and Wildlife Division
Tara Worobetz, Nature Conservancy of Canada

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For copies of this report, contact:

Information Centre – Publications
Alberta Environment / Alberta Sustainable Resource Development
Main Floor, Great West Life Building
9920 108 Street
Edmonton, Alberta, Canada T5K 2M4
Telephone: (780) 422-2079

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EXECUTIVE SUMMARY

In 2000, the Alberta Minister of Environment (now Sustainable Resource Development) reaffirmed the piping plover as an endangered species in Alberta. In 2001, the Alberta Piping Plover Recovery Team was formed, and completed a recovery plan that was approved by the Minister in April 2002. *The Alberta Piping Plover Recovery Plan, 2002-2004* describes a variety of strategies and actions to be implemented over a three-year period to achieve: (1) a provincial population of 300 breeding adults, (2) no net loss of breeding habitat in the province, and (3) a median fledging rate of 1.25 chicks/pair/year.

This report reviews activities completed during the implementation of the *The Alberta Piping Plover Recovery Plan, 2002-2004*, and provides guidance towards the drafting of an updated recovery plan, to be submitted for Ministerial approval in 2005. Major accomplishments achieved during implementation, and described in this report, include:

- Review and documentation of historical habitat use by piping plovers in the province on a lake and quarter-section basis
- Application to Alberta Public Lands and Forests Division and the Special Areas Management System for protective notations on 135 quarter sections of crown land where plovers are known to have occurred
- Involvement in numerous referrals concerning industrial development around plover breeding lakes
- Completion of management plans for plovers on 30 lakes in the province
- Personal contact with at least 74 landowners and 260 cottagers on 26 plover-inhabited lakes
- Completion of 15 habitat improvement projects on 11 lakes. In total 16 lakes were included in habitat improvement or interpretive projects over three years.
- Establishment of a seasonal sanctuary to prevent disturbance of plovers on Muriel Lake
- Widespread use of predator exclosures to more than double the hatching success of plover nests
- Completion of a review of predator management techniques applicable to plovers in Alberta
- Numerous presentations to technical and non-technical audiences on plovers and their management
- Preparation and distribution of a landowner information package
- Completion of breeding pair and brood surveys on between 33 and 44 lakes each year, including discovery of new populations on five Alberta lakes
- Banding of over 300 chicks, and compilation of re-encounters with birds on the breeding grounds and on wintering areas along the Gulf of Mexico
- Compilation of plover productivity data gathered since 1994. Analysis showed that production targets of 1.25 chicks/pair/year were exceeded during all three years of plan implementation
- Securement of $597,500 in cash funding and in-kind support from numerous individuals and agencies. This total slightly exceeded budgeted funding of $586,000.

A new recovery plan to cover the period 2005-2010 is currently being drafted, based on experience gained during the implementation of the inaugural plan. The new plan will focus on many of the same activities as the first plan, and is intended to be compliant with requirements of the new federal *Species at Risk Act* (SARA).

INTRODUCTION

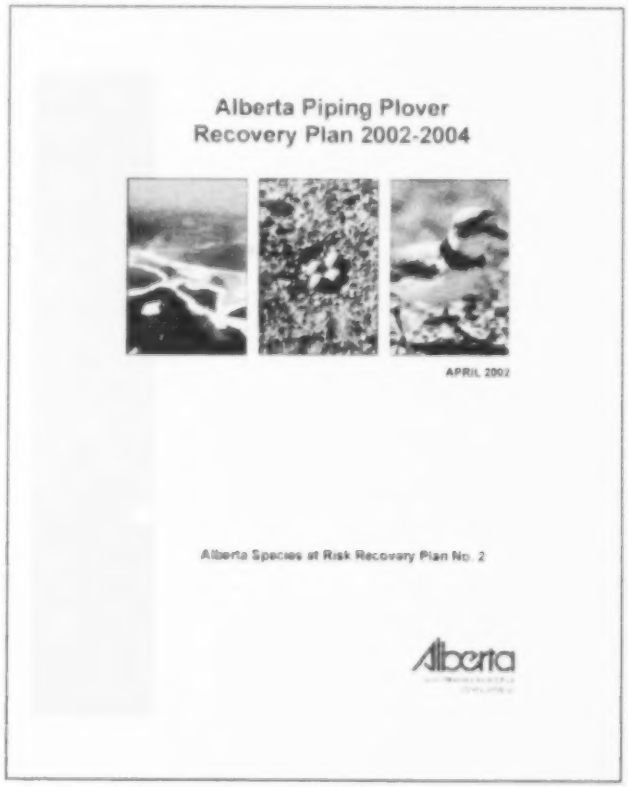
In 2000, the Alberta Minister of Environment (now Sustainable Resource Development) reaffirmed that the piping plover be listed as an endangered species under Alberta's *Wildlife Act*. The listing was based on the small provincial population, persistent threats to habitat, and the failure of existing management efforts to increase populations. Pursuant with this listing was a directive to Alberta Fish and Wildlife Division that a recovery team be established to draft a provincial recovery plan that would focus on the protection of habitat and nests of the piping plover in Alberta.

In April 2001, the Alberta Piping Plover Recovery Team (hereafter, APPRT) was established, with representatives from Alberta Fish and Wildlife Division, Alberta Public Lands and Forests Division, Alberta Beef Producers, Special Areas Board, Ducks Unlimited Canada, The Nature Conservancy of Canada, Canadian Wildlife Service, and the Alberta Conservation Association. The Minister approved the implementation of the *Alberta Piping Plover Recovery Plan, 2002-2004* (APPRT 2002) in April 2002. The Plan described a series of strategies and actions devised by the APPRT to:

(1) Achieve a well-distributed, long-term average population of 300 individual piping plovers within their home range in Alberta

(2) Ensure no net loss of breeding habitat quantity or quality (both breeding and feeding) due to human influences, and

(3) Employ all possible management techniques to achieve a median fledging rate of greater than 1.25 chicks/pair/year in the province.



We report here on the progress of actions implemented during the three-year period spanned by the inaugural recovery plan. Experience gained during this implementation will form the basis of strategies and actions being included in a new recovery plan that will be submitted for Ministerial review in the spring of 2005.

STRATEGY 1: Plan Management and Administration

Plan Management and Administration includes all activities related to the operation of the Alberta Piping Plover Recovery Team, coordination and implementation of the recovery effort, evaluation and revision of plan actions, and data management.

- **Convene the Alberta Piping Plover Recovery Team a minimum of twice annually and circulate results of these meetings to interested persons (5.1.1)**[1]

A total of five APPPRT meetings were held over three years, as well as one conference call. With the implementation of the Plan underway, and strong lines of communication being established between Team members, formal meetings are now necessary only once a year. Meeting minutes were prepared for each meeting, and circulated to Team members, Fish and Wildlife Division headquarters in Edmonton, and the Canadian Association of Petroleum Producers, which is an observer to the APPRT.

The Alberta Piping Plover Recovery Team (March 2004). Left to right: Dave Moore, Lance Engley, Craig Horner, Mike Barr, Gerry Haekel, Laurel Murphy, Dave Prescott, Ed Hofman, Paul Goossen, Dug Major.

- **Monitor and assess the progress of recovery plan actions, and develop new recovery strategies and actions when needed (5.1.2).**

The APPRT reviews progress on Plan actions at each meeting. No significant changes in management strategies or actions were undertaken during the life of the Plan. Minor alterations are documented in this report.

- **Co-ordinate at least one training session per year in two or more Fish and Wildlife regions (5.1.3).**

Training session at Baxter Lake

Training sessions were held in the first year in three former Fish and Wildlife Division regions (regional boundaries have since been realigned). In the latter two years of implementation, we moved away from formal training sessions, and invited participation of individuals or small groups on an ongoing basis. In total, over 40 staff from Sustainable Resource Development and other agencies participated in plover fieldwork over three years.

[1] Numbers in parentheses are section numbers in the *Alberta Piping Plover Recovery Plan, 2002-2004*. Some actions have been reworded for brevity. The reader is referred to the recovery plan for more detail.

Recruit and train additional field staff to maintain and conduct annual field programs (5.1.4)

One or two permanent staff members from the Alberta Conservation Association (ACA) coordinated most field activities, with extensive assistance from other staff of the ACA and Alberta Fish and Wildlife Division. Two seasonal field staff were hired through the ACA for the project in 2002, with three staff being hired in each of 2003 and 2004.

Liaise with the Prairie Piping Plover Recovery Team (PPPRT) and other provincial, multi-provincial or international conservation initiatives and municipal governments to ensure continuity and flow of information between agencies (5.1.5).

Close contact between the APPRT and the PPPRT is assured by having the respective team leaders serve on both teams. The APPRT leader attended all three scheduled meetings as the Alberta representative to the PPPRT, and participated in two conference calls. The Team Leader attended and presented or co-presented provincial data at the Great Plains Piping Plover Science Workshop in Regina in November 2003 (Engley and Prescott 2004, Prescott 2004). The APPRT representative from the Alberta Conservation Association also presented at this workshop.

Ongoing liaison with government, non-government agencies and individuals occurred at a variety of levels. This included meetings with agencies involved in management of plovers at a local level (e.g., Alberta Public Lands and Forests Division, Alberta Community Development, Alberta Environment, several municipalities, Special Areas Board, Metis reserves, landowners and leasees, consultants, oil and gas companies), at the interprovincial level through the PPPRT and the Canadian Wildlife Service, and internationally through participation in the International Census (see Prescott 2001b for Alberta results) and direct contact with state agencies, non-government agencies, and the U.S. Fish and Wildlife Service.

Enter accumulated plover data into the Biodiversity/Species Observation Database (BSOD) and other centralized databases following each field season (5.1.6).

The following databases have been maintained on an ongoing basis during Plan implementation:

- All observational data for plovers are entered into the Biodiversity/Species Observation Database (BSOD), maintained by Alberta Sustainable Resource Development. Most records originated from plover field staff, but also from other staff of ASRD and the ACA, members of the public, and biological consultants. A total of 358 individual piping plover records have been input into BSOD since 2002.
- Databases of original capture and recovery locations for banded birds
- Database that documents landowner/cooperator information and contact history
- Database that records plover use and breeding status, land ownership, protective status, and other information on a quarter-section basis
- Maintenance of GIS coverages relevant to plover management, including nest locations and georeferenced images of lakes.

STRATEGY 2: Habitat Protection and Management

Habitat Protection and Management includes activities related to ensuring a high quality of breeding habitat for piping plovers in Alberta.

Identify quarter sections on all lakes that have plovers or have had plovers in the past (5.2.1).

An extensive review of all published and unpublished distributional records for piping plovers in Alberta through 2001 was conducted (Wells et al. 2002). Records, including evidence of breeding, were recorded on a quarter-section basis in specific years. The review found that piping plovers had been reported from at least 75 lakes in the province since the 1930s, with breeding being confirmed on 45 lakes. A total of 208 quarters on 48 lakes were identified as supporting or having supported piping plovers, with the ownership being split approximately equally between crown and private land (approximately 75 landowners). Only one quarter section was found to be protected by an endangered species notation (PNT, see below).

Grazing and oil extraction on shores of Baxter Lake

Information on habitat occupancy has been compiled in a database, which is updated annually. The cumulative number of lakes known to support plovers in the province is now at least 80 (through 2004), with occupied habitat being identified in 246 distinct quarter sections. Information extracted from this database will be a key source of information for the designation of critical habitat for piping plovers in Alberta. Critical habitat denotes the areas required to achieve recovery or survival of a species at risk, and is a requirement of the recently passed federal *Species at Risk Act* (SARA).

Make applications to Public Lands and Forests Division to apply protective notations or other protective designations to all quarter sections occurring on provincial public land (5.2.2).

Protection notations (PNTs), or similar instruments are intended to bring attention to the presence of key interests (in this case, an endangered species) on crown land where industrial activities or other developments are proposed. In 2002, applications were made to Alberta Public Lands and Forests Division to place PNTs on 38 quarter sections (on 12 lakes) comprised of provincial crown land. A later follow up (fall 2004) showed that all but four of these applications had been

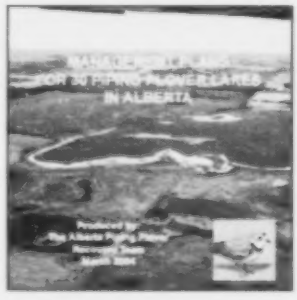
denied. Thirty-six applications were resubmitted in November 2004, and should be accepted without further justification. In February 2003, notations on 95 quarter sections were submitted to, and subsequently included in the Special Areas Management System (SAMS), a registry system with provisions similar to PNTs that is administered within the Special Areas of Alberta.

- **Establish the recovery team as a key contact in referral systems, for consultation regarding activities that affect the habitat and hydrology of plover-inhabited lakes (5.2.3).**

The application of protective notations, as well as increased knowledge of plovers and their distribution by government biologists, has resulted in numerous inquires from industry (generally oil and gas companies) about appropriate activities where developments (e.g. wells, pipelines) are proposed. Such referrals have occurred on Akasu, Chain #4, Chappice, Dowling, Gooseberry, Goosequill, Hansman, McLaren, McGregor, Red Deer, Rockeling Bay, and Sam Lake since 2002. In many cases, changes in development plans have been negotiated to prevent disturbance to plovers or degradation of habitat. No known damage to plover habitat, or disturbance to nesting birds occurred as a result of industrial activities. In several instances, consultants hired by developers conducted pre-development surveys for the presence of plovers, and have thereby contributed to our knowledge of plover distribution in Alberta. In order that surveys are conducted in an appropriate fashion, an inventory protocol has been developed, and is published on the Fish and Wildlife Division web site for public use (Alberta Sustainable Resource Development 2005).

- **Create at least 25 lake management plans that will detail specific management actions required to assist plover recovery on key breeding lakes in the province (5.2.4).**

In 2003 and 2004, concise management plans were completed for 30 lakes in the province (Akasu, Albert, Baxter, Beaverhill, Birch, Buffalo, Chain #4, Chappice, Cipher, Dowling, Foster, Frog, Gooseberry, Handhills, Hansman, Horseshoe, Killarney, Leane, Little Fish, McGregor, Metiskow, Muriel, Piper, Plain, Plover, Red Deer, Sunken, McLaren, West, and West Reflex). The plans were compiled on a compact disk (APPRT 2004), and distributed to key management individuals. These management plans form the basis for subsequent management actions on each lake (see below).



- **Hire personnel to negotiate cooperative management options detailed in lake management plans with landowners (5.2.5).**

A biologist was hired through the Alberta Conservation Association in 2002 to be the primary negotiator for habitat improvements on private or leased lands, and has maintained that role through to the present. A number of other individuals, from a variety of agencies (Alberta Fish and Wildlife Division, Alberta Conservation Association, Alberta Public Lands and Forests Division, Ducks Unlimited Canada, and the Nature Conservancy of Canada) have also been involved in securing cooperative agreements with landowners and lessees.

During implementation of this recovery plan, contact was made with 74 landowners and 260 cottage owners around 26 plover lakes (see Table). The vast majority of these contacts (97.6%) were made during personal visits. In some cases, visits were intended to foster support and cooperation for particular management activities to improve habitat quality for piping plovers.

However, most visits were made to inform landowners or cottagers about the presence of plovers, to secure access across private land, to gain support for local management activities, or to promote the appropriate use of shoreline habitat. Since 2002, the level of landowner/cottager awareness of plovers and their management has been greatly increased through these efforts (e.g. Rippin et al. 2004). In general, support for recovery of the piping plover has been strong.

Number of unique landowners or cottage owners (in parentheses) contacted on plover lakes in Alberta between April 2002 and March 2005.

Lake	# contacted	Lake	# contacted
Akasu	2	Horseshoe	2
Baxter	8	Killarney	2
Beaverhill	1	Leane	1
Birch	4	Little Fish	5 (1)
Chain #4	4	McLaren	1
Cipher	2	Metiskow	1
Clark	2	Muriel	(250)
Dowling	7	Piper	3
Foster	6	Red Deer	3
Freshwater	1	Reflex	3 (9)
Frog	4	Rider/Rockeling	1
Gooseberry	1	Sunken	1
Handhills	8	West	1

- **Implement recovery actions in lake management plans (5.2.6).**

Three years of recovery plan implementation have resulted in 15 livestock/habitat management projects being completed on 11 lakes. A total of seven signage/information and education initiatives were included as part of the management on these lakes. Projects on these 11 lakes are described in detail in the Appendix. Signage projects were also completed on several lakes where habitat improvements have not yet occurred or are not planned (Hansman, Baxter, Miquelon, Dillberry, and Gooseberry). Negotiations have taken place on six more plover lakes with the hopes of developing future management projects. At least two projects have developed to the point where implementation is anticipated in 2005.

STRATEGY 3: Productivity Enhancement

Productivity Enhancement includes all management techniques aimed at increasing the reproductive success of breeding piping plovers.

- **Expand the predator exclosure project to include as many lakes as possible (5.3.1).**

A major improvement in plover management over the past few years has been the development and wide-scale implementation of a small, portable predator exclosure. This design, developed by biologists from the ACA and Alberta Fish and Wildlife Division, is an improvement over previous (larger) designs in that it is less visible to the public, and appears less attractive as perches for raptors and as rubbing posts for cattle. The design is now in widespread use in Saskatchewan as well. The improved exclosure has resulted in exceptional nesting success in

Alberta over the past three years. Of 180 nests protected with exclosures (47 in 2002, 71 in 2003, and 62 in 2004), 166 have hatched (92.2%), compared with 13 of 26 (50.0%) nests left unprotected during the same period. Predator exclosures remain the most cost effective and efficient tool for enhancing reproductive success of piping plovers in Alberta.

Erecting a predator exclosure over a nest

Piping plover on nest inside exclosure

- **Train permanent and field staff in the use of predator exclosures and the collection of productivity data (5.3.2).**

Detailed training on the use of exclosures and the collection of field data was provided to seasonal staff hired during each year of the program. In addition, over 40 staff from a variety of partner agencies participated in field work since 2002. These personnel received training in a wide variety of field techniques and data collection specific to piping plovers.

- **Compile and review existing literature on the effectiveness of various predator deterrence techniques as a management tool for increasing plover productivity (5.3.3).**

A review of all available techniques for minimizing predation on eggs, chicks and adult piping plovers has been completed (Schmelzeisen et al. 2004). This review draws on literature from a wide variety of species and management objectives. Specific recommendations included maintaining wide-scale implementation of the predator exclosure program, continued removal of stick nests around lakes, the use of electrified fences to protect nesting peninsulas, experimentation with the use of chick shelters in areas of sparse vegetation cover, destruction of coyote and fox dens (when unoccupied) near nesting beaches, exploring the desirability of gull control (through oiling of eggs) on selected lakes, and monitoring ongoing research into the efficacy of mammalian scent deterrents.

- **Expand the use of specific predator deterrence measures such as removal of stick nests of avian predators (crows, raptors) to increase plover survivorship (5.3.4).**

Approximately 400 stick nests were removed during three winters around Killarney, Red Deer and West Reflex lakes. Although the success of this program (initiated in 2000) is difficult to measure, there have been no known instances of avian depredation on adult plovers since 1999, when at least 27 adults were killed near nests. Merlins were the suspected predator (Michaud and Prescott 1999, Murphy et al. 2003).

STRATEGY 4: Information and Education

Information and Education includes all actions required to raise awareness and communication between agencies responsible for the execution of recovery plan and the stakeholders affected by piping plover issues.

- **Perform presentations on plover-related issues to technical and non-technical audiences (5.4.1).**

Presentations have taken a wide variety of forms – from personal visits to landowners and cottagers, to presentations at scientific conferences. The following are some of the audiences and educational media that were used during implementation of the recovery plan.

Presentation to school group at West Reflex Lake

Presentations were made to landowner groups at Baxter Lake and Muriel Lake (open house and annual visits), Red Deer River Naturalists, Inglewood Bird Sanctuary, Alberta Chapter of the Wildlife Society, Alberta Endangered Species Conservation Committee, Prairie Piping Plover Recovery Team, Destination Conservation, Central Alberta Grazing Association, Prairie Farm Rehabilitation Association, ACA Partners in Conservation Conference, Annual Conference of the Wildlife Society, NAWMP Biodiversity Conference, Girl Guides of Canada, Boy Scouts of Canada, Junior Forest Wardens, Buffalo Lake Watershed Group, Northern Great Plains Piping Plover Science Workshop, Canadian Association of Petroleum Producers, and the Canadian Association of Geophysical Contractors.

Information delivery was also accomplished through the production of an interactive display in collaboration with the Medicine Hat Interpretive Program, preparation and distribution of a newsletter to 300 cottages on Muriel Lake, design and erection of interpretive signage at Muriel Lake, West Reflex Lake, Hansman Lake, Baxter Lake and four provincial parks (Dillberry Lake, Little Fish Lake, Miquelon Lakes, Gooseberry Lake), production of a province-wide newsletter for landusers and cooperators (for distribution in spring 2005), maintenance of web-based information, production of landowner information package (see below), and the design and production of a new species at risk brochure on piping plovers.

Muriel Lake cottagers with plover T-shirts

Sign at Muriel Lake

Articles on plovers and their management appeared in several publications, including the Edmonton Journal, Western Producer, Red Deer Advocate, St. Paul Journal (2), Provost News, Viking Weekly Review, Camrose Canadian, Vermilion Standard and Conservation magazine.

Articles were sent out to many more papers and communication outlets but no confirmation of total number of presented stories was received.

- **Produce and distribute a piping plover information package for landowners affected by plover issues. This information should be produced in consultation and partnership with stakeholder organizations (5.4.2).**

Landowner information package

An information folder entitled "*You, Your Land, and the Piping Plover*" was produced in 2002. This folder, which includes management messages and education materials (brochures, postcards, etc.) is a key means of delivering information to landowners and lessees that are targeted for specific management initiatives. The information in used to supplement personal visits, and has been delivered to approximately 70 rural residents over three years.

- **Explore methods of informing and educating industrial developers that may affect piping plover recovery (e.g., seismic industry) (5.4.3).**

The primary means of informing and educating industrial developers has been through the government referral process. Through this system, developers become familiar with the location of plover lakes, required adherence to timing and set back guidelines, and requirements for standardized pre- and post-development surveys.

Presentations on endangered species management in Alberta, with emphasis on piping plovers, were delivered to workshops or conferences held by two major industrial interests: the Canadian Association of Geophysical Contractors, and the Canadian Association of Petroleum Producers.

- **Produce annual reports including work plan alterations, progress updates, and evaluation and revision of goals and objectives (5.4.4).**

An annual report was completed after the first year of implementation (APPRT 2003). A progress report prepared after the second year of implementation was published on the Fish and Wildlife Division web site. Numerous other reports on particular aspects of the recovery effort have been produced (see Literature Cited), and a variety of reports for funding agencies have been completed and distributed.

STRATEGY 5: Research

Research includes all actions related to population monitoring and evaluation of management actions in Alberta.

- **Conduct annual adult and brood surveys on a core of at least 25 primary lakes each year depending on water cycles and habitat availability (5.5.1).**

Piping plover populations shift yearly, depending on local water conditions. Annual adult surveys are therefore necessary to determine where management efforts should be directed, and to monitor population size. Brood surveys are used to determine fledging success. This metric, in

Searching for piping plovers

combination with measures of hatching success and other measures, is used to estimate annual production of piping plovers in Alberta (see below).

In 2002, 44 lakes were surveyed for adults, with 153 birds being found on 20 lakes (Engley and Schmelzeisen 2002). Broods were monitored in 15 lakes where breeding was confirmed (58 nests). Thirty-three lakes were surveyed in 2003, with 152 birds being recorded (Schmelzeisen and Engley 2003). Broods were monitored on 16 lakes where a total of 81 nests were discovered. In 2004, we inventoried 38 lakes, with 134 adults being found on 22 lakes (Engley et al. 2004). Broods were monitored on 17 lakes (81 nests).

Over the three-year period, five previously unsurveyed lakes were found to support piping plovers (Border, Clark, McGregor, South Cooking and West).

Spend three days per year performing aerial surveys, in an attempt to identify previously unknown plover habitat and to assess the current condition of known plover lakes before conducting annual population surveys (5.5.2).

Aerial surveys to locate breeding habitat

Extensive aerial surveys were conducted in 2001 (see Prescott 2001a), in advance of the 2001 International Piping Plover Census. Additional inventories of approximately 25 lakes (mostly irrigation reservoirs) in southern Alberta (Prescott 2002) and 35 lakes in and around CFB Wainwright in east-central Alberta were conducted on two separate flights in May 2002. Subsequent ground surveys identified breeding populations on two previously unsurveyed lakes (McGregor Reservoir and Border Lake), as well as potential habitat on a number of lakes that will be monitored in future years. Additional aerial surveys were not conducted in 2003 or 2004, as water conditions remained low, and relatively unchanged from the 2001 and 2002 surveys.

Continue with opportunistic banding, capture of banded adults and compilation of observations of banded birds (5.5.3).

Banding an adult piping plover

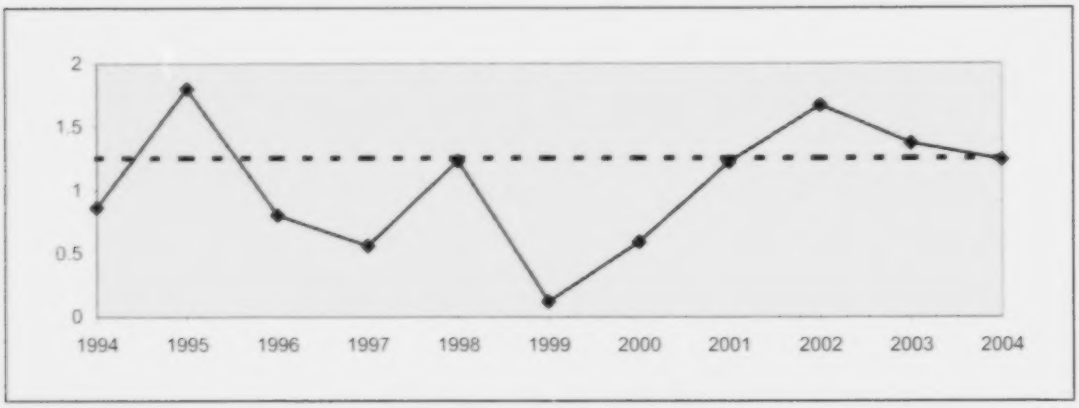
A total of 304 chicks were banded with a unique combination of lake/year color band sequences (99 in 2002, 101 in 2003, and 104 in 2004). This brings the total marked since 1996 to 620 individuals. Each year, an increasing number of colour-banded adults are encountered on Alberta lakes (29 in 2002, 34 in 2003, 63 in 2004). The vast majority of birds originate from Alberta, although a small fraction (<10%) represent birds banded in Saskatchewan by the Canadian Wildlife Service, or by researchers on the wintering

grounds in the southern United States. At least 66 encounters of Alberta-banded birds have come from the coast of the Gulf of Mexico since 1996, with the vast majority occurring in Texas.

- **Compile existing information on piping plover populations and productivity on individual lakes, to provide a baseline against which to evaluate future management actions (5.5.4).**

Data from 647 nests and 384 broods have been compiled through 2004, to determine hatching and fledging success for piping plovers in Alberta, and the impact of predator exclosures (Prescott and Engley, in prep.). The key result of this report, which should be completed by mid-2005 is that breeding production met or exceeded the targeted 1.25 chicks/pair/year in only 6 of 11 years since population monitoring began in 1994 (see Figure). However, the goal has been met or exceeded in each of the three years encompassed by the *Alberta Piping Plover Recovery Plan, 2002-2004*. Although the goal was likely achieved because of a combination of management activities, it is clear that a large part of the success was achieved through the use of predator exclosures. Exclosed nests had more than double (+105%) the hatching success of unmanaged nests since 1994. The increase in success is even more dramatic (+213%) for the new, smaller exclosures employed since 2001.

Productivity (chicks/pair) of piping plovers in Alberta since 1994. The dotted line is the goal of 1.25 chicks/pair/year set in the recovery plan.



STRATEGY 6: Resourcing

Resourcing includes securing continued and future government, non-government and industry support for recovery efforts in the province.

- **Establish annual work plans and determine funding levels required to carry out recovery actions (5.6.1).**

Work plans for each year remained essentially unchanged from those identified in the original Plan. Small exceptions noted in this report were based primarily on perceived need and priority for actions, rather than shortfalls in financial or manpower availability.

Approach government, non-government and industry partners to participate in or fund piping plover recovery initiatives, both locally and provincially (5.6.2).

Funding applications were made to a wide variety of agencies over the three-year implementation period by both Alberta Fish and Wildlife Division and the Alberta Conservation Association. Cash contributions to the program were $410,000 over three years (see Acknowledgements section for sources). "In-kind" contributions were calculated to be $187,500, although this figure is certainly an underestimate. The combined contribution of $597,500 is slightly higher than the predicted cost ($586,000) of recovery implementation listed in the *Alberta Piping Plover Recovery Plan 2002-2004*.

SYNTHESIS AND RECOMMENDATIONS

The accomplishments of the first three years of formal implementation of piping plover recovery met or exceeded our initial objectives, in terms of both financial support for the program, and in the successful completion of all actions specified in the *Alberta Piping Plover Recovery Plan, 2002-2004*. This is not too surprising, given the enormous interest and participation in our program over the past few years, and the tremendous support of landowners, lessees, and other land users.

Work over the past three years resulted in the achievement of two of the three goals of the recovery program. First, productivity met or exceeded targets (1.25 chicks/pair/year) set for Alberta. Second, we are confident that there was no net loss of habitat in the province due to anthropogenic influences. For a number of reasons, it is likely that the quality and quantity of breeding habitat actually increased greatly over the implementation period. These reasons include the completion of cooperative projects to improve habitat quality, increased landuser awareness of the presence of plovers on their land and adoption of practices that minimize disturbance and habitat degradation, compliance by industry with timing and setback distances for developments near plover lakes, public access restrictions on key breeding areas (e.g. sanctuary establishment), and the successful creation of artificial habitat. However, the main goal of the recovery program – the attainment of a well-distributed, long-term average population of 300 individual piping plovers within their Alberta range – has yet to be achieved. This goal is seen as a long-term target of the recovery program, and will require continued work to be realized, and ongoing management to be maintained. It is encouraging that recent management has allowed productivity in the province to rise to the point where population recovery is theoretically possible, and that sufficient breeding habitat appears to be present to support an increasing population. We are also encouraged by the observation that the provincial population decline appears to have been stabilized over the past three years at approximately 140-150 birds, and that the recent drought appears to have come to an end. Taken together, these factors paint a cautious, but optimistic outlook for the recovery of piping plovers in Alberta.

With the expiry of the inaugural recovery plan in 2005, a new plan is being drafted to guide the recovery of piping plovers over the next five-year period (2005-2010). It is unlikely that the new plan will deviate markedly from the strategies and actions that were pursued during the initial three years of implementation. Specific areas of focus will be on improving habitat quality through the continued development of cooperative projects with landowners and leasees, maintaining positive communication with past cooperators and other stakeholders, continuing to improve public awareness of plover management issues through personal contact with rural stakeholders, public presentations and other media, and on enhancing the productivity of piping

plovers through the use of predator exclosures and other means. The revised recovery plan will be different from the initial plan in one major respect – it must be compliant with the new federal *Species at Risk Act* (SARA). The most important requirement of SARA is that recovery strategies and action plans identify the "critical habitat" that is required for the recovery of each species at risk. Plans must also specify the activities that are likely to destroy critical habitat, and must indicate the steps required to ensure the protection of identified sites. Because of the potential ramifications to landowners and other stakeholders, the concept of critical habitat will be a key point of discussion among recovery team members during the preparation of the new recovery plan. The declaration of critical habitat has the potential to provide a powerful new tool for protecting piping plover habitat in Alberta.

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APPENDIX: Summary of major management activities by lake

Muriel Lake

Water levels on Muriel Lake have decreased markedly over the past 20 years. Receding shorelines have exposed large expanses of gravel that have supported increasing populations of piping plovers since breeding was first confirmed in 1995. In 2004, Muriel Lake supported the highest population of piping plovers in Alberta (Engley et al. 2004).

Due to extensive cottage development on the lake, recreation issues were considered the primary threat to plover breeding areas (APPRT 2004). In 2002, a survey of cottagers on the lake was completed, which indicated strong support for plover management, and general acceptance of access restrictions on newly-exposed islands on the lake (where most plovers were breeding). In 2003, the Minister of Sustainable Resource Development designated portions of Muriel Lake as seasonal waterbird sanctuaries under the Alberta *Wildlife Act*. Educational and cautionary signage was erected to advise residents of the presence of the sanctuaries. Regular communication with local residents was maintained through annual visits to cottages, a newsletter to cottagers, adjacent landowners and industrial interests (2004), and an open house/barbecue (2004) where lake users learned more about plover management. The result of these efforts is that knowledge of plovers has increased from 6% of the cottagers in 2002 to over 90% in 2004 and support for plover management on the lake remains strong (Rippin 2002, 2003, Rippin et al. 2004).

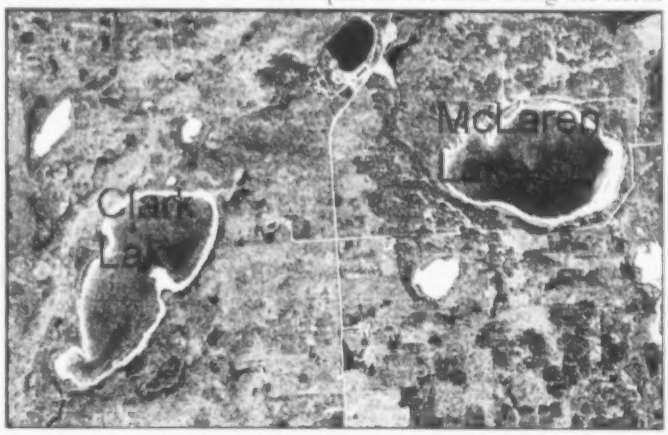
Handhills Lake

Handhills Lake is one of the most consistently used piping plover lakes in Alberta. In 1988, this lake supported the highest number of plovers (82 adults) ever recorded in the province. In recent years, the lake has generally held less than 10 birds per year, but contains extensive habitat necessary for the recovery of provincial populations. Damage to shoreline habitat by livestock was identified as the main threat facing piping plovers on Handhills Lake (APPRT 2004). Threats were also posed by recreational use of shorelines adjacent to a rodeo facility. To alleviate these threats, approximately 8500 m of fence has been erected (approximately 75% of lakeshore), and an existing off-site watering location has been enhanced (triangle on aerial photo). Interpretive and cautionary signage have also been erected (square on photo) to alert shoreline users to the presence of plovers. The Special Areas Board has been a valuable partner by providing financial assistance and by identifying key quarter sections in the Special Areas Management Database (SAMS). These notations

will ensure that important plover habitats on the lake are brought to the attention of land managers if industrial developments or changes to current land use are proposed.

Clark Lake

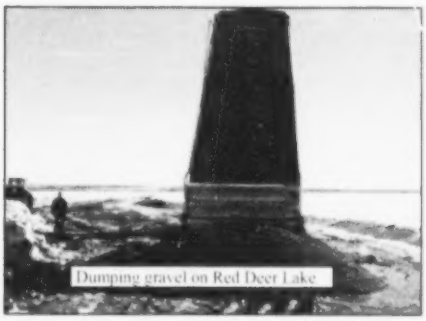
Clark Lake was first identified as having breeding piping plovers in 2004. It was immediately recognized that damage from livestock operations was a threat to the entire shoreline of the lake. With strong support from the landowner, approximately 2100 m of shoreline fence now protects high quality breeding habitat from livestock disturbance in three quarter-sections along the north and east shores of the lake. Included in the protected area is a peninsula of pristine habitat capable of supporting high densities of piping plover nests. Since this lake is newly discovered, more nesting habitat may be found during future surveys.



McLaren Lake

Since 2001, up to three piping plover nests have been confirmed every year the lake has been surveyed. The lake, though small, has wide beaches with good nesting potential and is fed from a spring on the west side of the basin. This spring reduces fluctuations in water levels and ensures that water will likely be present even when lakes around it may be completely dry. Two quarter-sections with high urgency for management (APPRT 2004) were fenced in 2004 to eliminate cattle damage to plover habitat on the south side of the lake. Access issues along the north side of the lake have limited survey opportunities and allows for only half the lake to be fully investigated.

Red Deer Lake


Dumping gravel on Red Deer Lake

Red Deer Lake has been used sporadically by piping plovers, but populations have increased to 10 adults in 2004 as lake levels have receded. Gravel beaches at Red Deer Lake are on top of muddy substrates and as such are very susceptible to damage from livestock. In addition, the relatively low salinity of Red Deer Lake means that vegetation encroachment on shorelines is rapid. Over three years of management, 400 m of livestock fence has been erected on four different quarter sections. In the spring of 2003, 80 cubic metres of gravel was spread along a 100 m stretch of shoreline that previously had no nesting habitat. This effort paid off in the summer of 2004 with the successful nesting of two pairs of piping plovers. In 2004, mechanical clearing of beach vegetation was attempted, although re-encroachment of

Artificial habitat on Red Deer Lake

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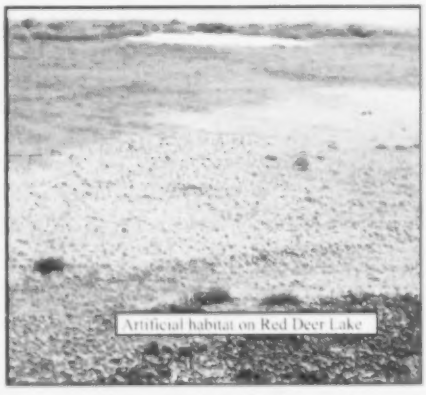
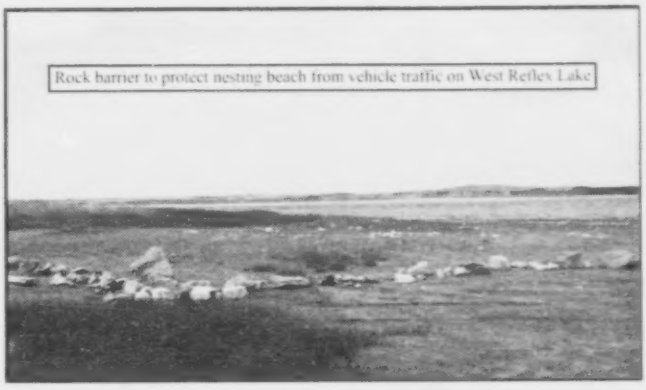

Artificial habitat on Red Deer Lake

forbs and grasses was rapid. One nest was found within the cleared area, suggesting some benefits to the exercise.

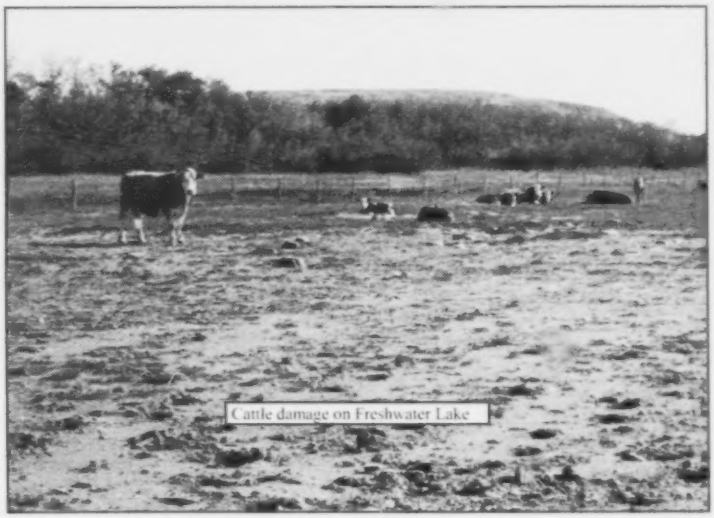
West Reflex Lake


Rock barrier to protect nesting beach from vehicle traffic on West Reflex Lake

Over the past 10 years, West Reflex Lake has supported the largest populations of piping plovers in Alberta (but was surpassed in 2004 by Muriel Lake). The most pressing threat to piping plovers identified on the Alberta side of West Reflex Lake is recreational activities and traffic (APPRT 2004). Action taken to mitigate threats began with contacting cabin owners on the south side of the lake as well as representatives from the Municipal District of Wainwright, Alberta Public Lands and Forests, Ducks Unlimited and the adjacent landowner. To reduce impact to plover habitat on the most used quarter section, large rocks and boulders were placed to create natural barriers to vehicles and interpretive signage was erected to inform beach users of proper beach etiquette. Cattle trampling problems threatened plover habitat on the eastern side of the lake in Saskatchewan but a partnership between the Saskatchewan Watershed Authority, Manitou Cattle Breeders Grazing Co-op and Alberta Piping Plover Recovery Team negated these threats by means of shoreline fences constructed along the southeastern shore.

Freshwater Lake

Freshwater Lake is in Saskatchewan, but lies only 1 km from the provincial boundary with Alberta. Due to its proximity to key piping plover lakes in Alberta, biologists from Alberta have regularly monitored Freshwater Lake. Livestock has frequently impacted the lake and nest destruction from cattle trampling has been know to occur (Schmelzeisen and Engley 2003). Nests on the lake have also been subject to high rates of abandonment, possibly due to cattle disturbance. In 2004, habitat concerns on the lake were brought to the attention of the Saskatchewan Watershed Authority. A partnership with the Manitou Cattle Breeders Grazing Co-op was quickly formed, and fences were erected to exclude the cattle from plover habitat.


Cattle damage on Freshwater Lake

Beaverhill Lake

Beaverhill Lake has historically provided habitat for up to 13 piping plovers annually. In recent years, low water levels have decreased piping plover use of nesting beaches though the potential for higher numbers of breeding pairs exists. Much of the shoreline of Beaverhill Lake is included in the *Beaverhill Lake Heritage Rangeland Natural Area*, affording a level of recognition and protection to the lake that is considered important to piping plovers and other migratory birds. Medium and high habitat threats were identified on two quarter-sections (APPRT 2004). To maintain the integrity of nesting habitat in these two quarter-sections, Ducks Unlimited Canada facilitated the installation of an off-site water source, construction of fences and implemented a rotational grazing strategy.

Border Lake

Located on Department of National Defence lands at the Western Area Training Centre (WATC), Border Lake was identified as having breeding piping plovers in 2004. The largest threat to plover shorelines here was deemed to be the use of vehicles in military exercises, possibly disturbing the birds enough to affect breeding or through direct destruction of nests. Through cooperation with the military, breeding habitat was protected by restricting access to the site. Increased communication between the Department of National Defence at the WATC and piping plover biologists should result in more surveys completed on the WATC.

Birch Lake

From two to 14 birds and up to four nests have been confirmed annually on Birch Lake from 1993 to 2003. Even though excellent gravel nesting habitat is plentiful, low water levels have reduced piping plover lake usage to zero in 2004. Of the seven quarter-sections on Birch Lake with previous records of birds or nesting, only one had high potential for damage from cattle activities. An 800 m shoreline fence constructed in 2003 on the southwestern end of the lake has mitigated that threat by excluding cattle from plover breeding habitat and securing habitat quality for when conditions improve. Cautionary signage has also been supplied to a lakeside landholder to reduce ATV traffic.

Little Fish Lake

Landowners assisting with fencing on Little Fish Lake

Plover populations on Little Fish Lake are very cyclic. Through much of the 1980s, and in the late 1990s, populations disappeared from the lake. However, populations in the late 1980s approached 50 birds, illustrating that Little Fish Lake is important to the recovery of plover populations in the province. The main threats to habitat on the lake are disturbance from recreational users (there are cottages and a Provincial Park on the lake), as well as cattle damage to shorelines. In the early 1990s, fencing was erected along the western shore of the lake to prevent cattle access. However, water levels have since receded dramatically, and the erected fences are a long way from the shore. A grazing agreement with several landholders along the west and north shores now allows them to graze cattle along shorelines during times when piping plovers are absent. Grazing is restricted to specific areas through the use of shoreline cross-fences constructed by the landholders. Vegetation on these shores has been reduced and no damage to plover habitat has been observed. If the habitat shows signs of degradation due to cattle presence the agreement can be altered or cancelled. Recreational threats to plover beaches have been addressed by way of a new interpretive sign erected at the Provincial Park on the east side of the lake and contact with a representative of the cottage owners. In 1992, a 15-year fencing and upland watering agreement to reduce piping plover habitat damage was signed between the landowner on the southeast end of Little Fish Lake and the (former) Buck for Wildlife Program. To honor the agreement and keep cattle on the upland, we refilled a dugout that had gone dry in 2004.